How to monitor your energy use

Why monitor energy?

You can't manage what you don't measure.
Good energy monitoring allows you to:

- Understand where and how energy is being used
- Identify areas where you can reduce energy consumption and save money
- Confirm whether energy-saving measures are working.

This leaflet will show you how to record information on your business' energy use, and outline some simple techniques to help you to use that data to spot money saving opportunities.

Did you know?

Using a meter to help monitor your energy typically identifies energy savings of more than 5%.

Three aspects of met

1. Gather data

- Learn how to read your meter. Digital meters are straightforward, but older dial versions (analogue) can be tricky (see below)

- Find out if your supplier keeps data for your business — larger sites* should be able to access consumption readings taken at half-hourly intervals. If not, consider installing your own half-hourly meter to get an accurate picture of your energy use, and save time in readings. If you do read your meter manually make sure that you take readings at regular intervals

- Always check your meter reading against your bill. Make sure that you are only paying for what you are using.

Reading an analogue meter

Start with the smallest unit first and read the dials in order. In this example that is left to right. For electricity, record the units in kWh, but gas could be cubic feet too. When the hand is between two numbers, write down the number it has just passed.

kWh per division

1,000   100   10

10,000   **kWh**   1kWh per div

1/10
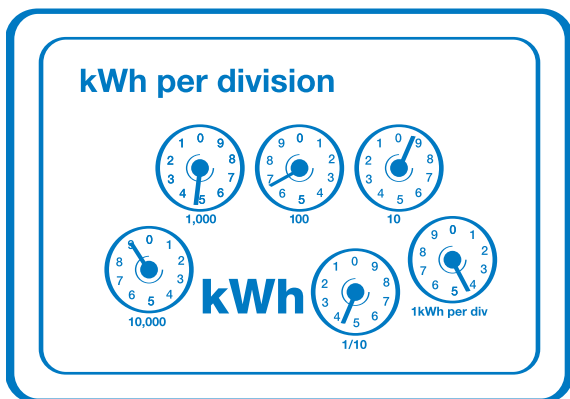
The reading on this example meter is 94694 kWh. The 1/10 reading is generally ignored

*>£15K spend on electricity a year.

2. Plot your data

- Whether you get your data from your supplier or manual readings, record it in a simple table. Many suppliers will let you download this information directly into a spreadsheet. Use the table to plot a straightforward graph of energy against time

- The more meter readings you take, the better the picture you can build of your site's consumption. This is why the Carbon Trust recommends half-hourly meter readings. This added detail will help you identify energy saving opportunities faster

- Contact the Carbon Trust for more information which will help you account for the variables that may affect your energy use.

Plotting a graph

This graph shows energy consumption over a day.

Try to establish your base load — the energy used while no activity is taking place. There should be a significant difference between the base load and the consumption when equipment is on (such as during work hours). Investigate if your base load seems to be high.
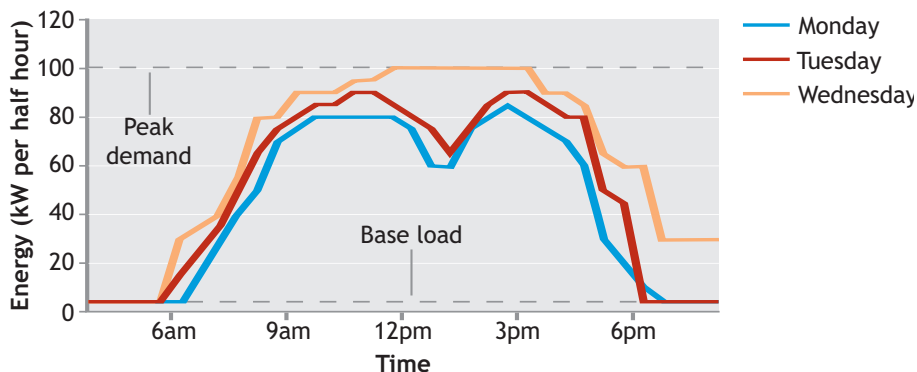
Energy usage
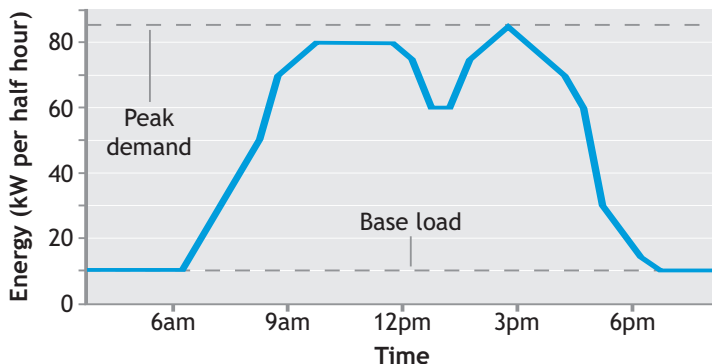
3. Understand your energy use

- Look at your graph of energy consumption and think about how this fits in with the pattern of production/occupancy of your building. Investigate any suspicious areas, for example, has the energy use continued at a high rate during periods of low production? Or, is energy still being used during office holidays?

- Also, consider other factors which might affect your energy consumption: did you change your production patterns, or did you need extra heating due to cold weather? The Carbon Trust has more information about analysing factors like these

- Investigate potential waste areas and make changes. And remember to re-plot your graphs to see if your changes have worked.

Analysing your graph

Compare the energy profile of different days with each other. Identify whether energy consumption is higher on certain days, or at particular times from day to day. For example, why is Wednesday's profile so high? Perhaps there is a straightforward explanation, such as work continuing during lunch time that day. Or perhaps there were inefficiencies that should be investigated.

Energy usage

Before you start

Ask how much information you have about your energy consumption — and whether you need more detail.

Your bill can tell you about your site's peak demand, power factor and overall energy use. These can all affect the amount you pay. Ask your supplier to help you understand your bill.

Consider installing sub-meters onto equipment that uses lots of energy. These will allow you to see the consumption patterns of that unit in detail.

Automatic meter reading systems provide accurate and timely data with the minimum of effort. These systems make it easy to take readings in real time and therefore identify savings opportunities quickly. They often pay for themselves in under a year.

Safety first

Although reading the meter should be perfectly safe, gas and electricity are potentially lethal, so:

*Never attempt to remove, install, repair, or tamper with a meter or any of its connections. **Always use a qualified technician**.*

Have the meter tested for electrical safety and/or gas leaks at least once a year.

Undertake a safety assessment of your energy meter's location. Where meters are installed in awkward or potentially hazardous locations, consider having them moved or installing a remote reading system.

Choosing metering equipment and an installer

If you want to get more useful information from your meter, you may consider purchasing a more sophisticated unit. The meter you buy may qualify for a tax break under the Enhanced Capital Allowances (ECA) scheme:

• Visit the products and claims section of the Energy Technology List (ETL) at **www.eca.gov.uk/etl**

• Look at the entries for Automatic Monitoring and Targeting and select the type of system you want to install

• The site also provides more information on the ECA scheme.

Use a qualified local supplier to install the meter, or a specialist installer in the case of more complex systems. A trade association such as the Energy Systems Trade Association can help you to find a local supplier or installer.

Need more help or information? Call the Carbon Trust on: 0800 085 2005 or visit www.carbontrust.co.uk/energy

The Carbon Trust helps businesses and public sector organisations cut their energy costs to combat climate change through the provision of free, professional advice and assistance.

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